What is claimed is:

Sub A' 1. A gateway apparatus, arranged between each of a plurality of circuit switched networks and an internet protocol network, for transmitting data received from each of the circuit switched networks to the internet protocol network, comprising:

an expansion section expanding compressed data received from the circuit switched network;

a compression section compressing the data expanded by the expansion section;

a setting section setting a compression form, including a transmission rate on the internet protocol network, of data compressed by the compression section; and

a controller transmitting the compressed data to the internet protocol network without being subjected to expansion/compression processes by the expansion section and the compression section when the compressed data can be expanded by another gateway apparatus which should receive the compressed data and when a transmission rate on the circuit switched network of the compressed data is not higher than a transmission rate set by the setting section.

2. A gateway apparatus, arranged between each of a plurality of circuit switched networks and an internet protocol network, for transmitting data received from the internet protocol network to each of the circuit switched networks, comprising:

an expansion section expanding compressed data received from the internet protocol network;

a compression section compressing the data expanded by the expansion section;

a setting section setting a compression form, including a transmission rate on the circuit switched network, of data compressed by the compression section; and

a controller transmitting the compressed data to the circuit switched network without being subjected to expansion/compression processes by the expansion section and the compression section when the compressed data can be expanded by on a circuit switched network which should receive the compressed data and when a transmission rate on the internet protocol network of the compressed data is not higher than a transmission rate set by the setting section.

3. A network system comprising a first gateway apparatus to which a first circuit switched network is connected, a second gateway apparatus to which a second circuit switched network is connected, and an internet protocol network to which the first gateway apparatus and the second gateway apparatus are connected, wherein

the first gateway apparatus comprises:

a notification section giving information of a CODEC form of compressed data transmitted from the first circuit switched network to the first gateway apparatus to the second gateway apparatus as CODEC information when compressed data is transmitted from the first circuit switched network to the

second circuit switched network through the internet protocol network; and

a selection section selecting a compression form of the compressed data transmitted from the first gateway apparatus to the second gateway apparatus from information of CODEC forms which are received from the second gateway apparatus and can be executed by the second gateway apparatus,

the second gateway apparatus comprises:

an expansion section expanding the compressed data received from the first gateway apparatus;

a compression section compressing data expanded by the expansion section;

a determination section, when a CODEC form corresponding to the CODEC information received from the notification section can be executed by the second gateway apparatus and when compressed data compressed in the CODEC form can be expanded by the second circuit switched network, determining a compression form corresponding to the CODEC information as a compression form of compressed data transmitted from the second gateway apparatus to the second circuit switched network;

a second notification section giving only information of the CODEC form determined by the determination section to the first gateway apparatus as information of a CODEC form which can be executed by the second gateway apparatus; and

a controller transmitting the compressed data received from the first circuit switched network to the internet protocol network without being subjected to

expansion/compression processes by the expansion section and the compression section when the compression form, which is selected by the selection section, of the compressed data transmitted from the first gateway apparatus to the second gateway apparatus coincides with the compression form, which is determined by the determination section, of the compressed data transmitted from the second gateway apparatus to the second circuit switched network.

4. A network system according to claim 3, wherein the first gateway apparatus further comprises:

a second expansion section expanding compressed data received from the first circuit switched network;

a second compression section compressing the data expanded by the second expansion section; and

a second controller transmitting the compressed data received from the first circuit switched network to the internet protocol network without being subjected to expansion/compression processes by the expansion section and the compression section when the compression form of the compressed data transmitted from the first circuit switched network to the first gateway apparatus coincides with the compression form, which is selected by the selection section, of the compressed data transmitted from the first gateway apparatus to the second gateway apparatus.

5. A network system according to claim 3, wherein when the determination section cannot determine a CODEC form corresponding to the CODEC information received from the

notification section as a compression form of compressed data transmitted from the second gateway apparatus to the second circuit switched network, the determination section determines a CODEC form of data which can be executed by the second gateway apparatus and expanded by the second circuit switched network as the compression form of the compressed data transmitted from the second gateway apparatus to the second circuit switched network, and

the second notification section gives, of the CODEC form notified by the notification section and the CODEC form determined by the determination section, only information of the CODEC form in which the transmission rate of the compressed data is low to the first gateway apparatus as information of a CODEC form which can be executed by the second gateway apparatus.

6. A network system according to claim 4, wherein when the determination section cannot determine a CODEC form corresponding to the CODEC information received from the notification section as a compression form of compressed data transmitted from the second gateway apparatus to the second circuit switched network, the determination section determines a CODEC form of data which can be executed by the second gateway apparatus and expanded by the second circuit switched network as the compression form of the compressed data transmitted from the second gateway apparatus to the second circuit switched network, and

the second notification section gives, of the CODEC form

notified by the notification section and the CODEC form determined by the determination section, only information of the CODEC form in which the transmission rate of the compressed data is low to the first gateway apparatus as information of a CODEC form which can be executed by the second gateway apparatus.

7. A communication apparatus in which a low-order network and a high-order network are connected to each other, comprising:

an expansion section expanding compressed data received from the low-order network;

a compression section compressing the data expanded by the expansion section;

a setting section setting a compression form, including a transmission rate on the high-order network, of data compressed by the compression section; and

a controller transmitting the compressed data to the high-order network without performing of expansion/compression processes by the expansion section and the compression section when a transmission rate of the compressed data on the low-order network is not higher than the transmission rate set by the setting section.

8. A communication apparatus in which a high-order network and a low-order network are connected to each other, comprising:

an expansion section expanding compressed data received from the high-order network;

a compression section compressing the data expanded by the expansion section;

a setting section setting a compression form, including a transmission rate on the low-order network, of data compressed by the compression section; and

a controller transmitting the compressed data to the low-order network without performing of expansion/compression processes by the expansion section and the compression section when a transmission rate of the compressed data on the high-order network is not higher than the transmission rate set by the setting section.